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ABSTRACT

The French sociologist Jacques Ellul has had great influence on contemporary thought about the role of science and technology in the emerging global society. His books "The Technological Society" (1954) and "The Technological System" (1980) characterize the new social context as a tightly interlocked global technological system increasingly dominated by monolithic "technique" with both "technicist" and "humanist" components. This paper attempts (1) to summarize Ellul's major theoretical concepts, arguments, and conclusions; (2) to highlight the role of educational research and techniques in his global technology system theory; (3) to relate Ellul's thinking to social context issues underlying American educational research; and (4) to assess Ellul's position on education and related techniques of social control. Ellul asserts that humanity is becoming encircled in a complex politico-technical system that controls and will eventually absorb us all. Modern technique is almost limitless and is characterized by rationality, automatism, self-augmentation, monism, universalism, and autonomy. Human techniques lubricate mankind's adjustment to the new machinery and organizational structures. Certain dominant paradigms of educational research, whether behaviorist or progressive, reinforce Ellul's viewpoint, as more and more technicians are created to fuel the system. Reliance on "social efficiency" and standardized testing further illustrate technique's domination. The paper concludes by refuting Ellul's indictment of progressive or humanist approaches to education. Ellul's "identity thesis" fails because the technician is ultimately as important as the method itself. Ten references are included. (MLH)

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EDUCATIONAL RESEARCH AND "HUMAN TECHNIQUES" IN THE GLOBAL TECHNOLOGICAL SYSTEM: THE THEORY OF JACQUES ELLUL

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EDUCATIONAL RESEARCH AND "HUMAN TECHNIQUES" IN THE GLOBAL TECHNOLOGICAL SYSTEM: THE THEORY OF JACQUES ELLUL

The theme of this year's AREA conference is "educational research in a global context." No social theorist has influenced contemporary thought about the role of science and technology in the emerging global society more than the French sociologist Jacques Ellul. In a series of works spanning a quarter century, from THE TECHNOLOGICAL SOCIETY[1] (1964, Original French edition 1954) to THE TECHNOLOGICAL SYSTEM (1980), he has developed a characterization of the emerging social context as a tightly interlocked "global technological system."

Objectives

This paper has four objectives:

(1) to provide a clear summary of Ellul's major theoretical concepts, arguments, and conclusions;

(2) to highlight the role of educational research and techniques in his theory of the global technological system;

(3) to relate Ellul's thinking to the contemporary American discussion of the social context of educational research and techniques; and

(4) to provide a cogent critical assessment of Ellul's position on education and related techniques of social control.

INTRODUCTION

In each of the human sciences (e.g. psychiatry, psychology, pedagogy, administrative science, etc.), as methods for modifying and controlling human behavior have been developed, two conflic-

ting perspectives have emerged which may be labeled "technicist" and "humanist."

The technicists have sought to provide a precise, "scientific" basis for practices of behavior modification and control. They have demanded that treatment goals be defined (or redefined) in operational terms, so that the effects of alternative treatments could be reliably measured --- for only in this way would it be possible to determine the most effective forms of treatment. The technicist research paradigms have been quantitative and experimental. Humanists, on the other hand, have sought to promote broad, philosophical and ethical goals such as "well-being," "growth" or "self-actualization." On the whole, while continuing to regard their work as "scientific," they have resisted the demand for precise measurement of treatment results. They have tended to favor qualitative and holistic methods of study, aimed at providing "insight" to guide the practitioners "art." This "art" they have not in general sought to reduce to repeatable treatment variables well-defined for research purposes. Examples of such "humanist" approaches include progressive education, the various schools of humanistic psychology, and "theory Y" approaches in industrial management.

Jacques Ellul's probing discussion of human technique in THE TECHNOLOGICAL SOCIETY provides a comprehensive framework within which technicist and humanist perspectives may be seen as two related aspects of a single unified civilizational phenomenon. For Ellul, all ways of doing things in our "technological society," whether applied to nature or to human beings, are increasingly dominated by "technique," by technicist approaches gene-

rated and evaluated by the criteria of technical rationality. The human sciences of our era, including their humanist branches, exist as "lubricants" in the process wherby technicism and mechanization expand. They provide the oil in the machine. Under a thin "humanist" veneer, even the humanist branches of the human sciences promote the expansion of monolithic "technique," and are themselves a necessary component of "technique" and inherently technicist.

In this paper I provide a detailed account and critical assessment of Ellul's theory of human technique, and relate it to recent American discussions of the social context of educational institutions and research. THE TECHNOOGICAL SOCIETY has been with us for more than thirty years now, yet there are grounds for providing another critical reading, focusing on the theory of education and related human techniques. It is almost a ritual among writers on Ellul to say that he is a difficult writer who has not yet been fully understood, so it would appear to be worthwhile to provide additional clarification of his methods, theses, arguments, and conclusions. His theory of human technique provides a vantage point for a fresh examination, because, surprisingly, there has never been a full length discussion of the theory of human technique in THE TECHNOOGICAL SOCIETY, and as this theory is central to his over-all argument, a critical examination seems long overdue.

Two guideposts on his aims and methods might be useful.

First, Ellul does not always provide the clear and stable definitions of terms, or the clear, logical structure of argu-

ment, which Anglo-american readers may expect. He says that his goal is to "encircle the facts," and on the basis of factual data to "seek to derive new aspects and new 'lines of force' for new studies." He states: "the point is to let oneself be guided by a kind of logic internal to facts and things." "Facts," he adds, "have their own form and their specific weight." (148)

Second, because of this "fact-centered" approach, conceptual refutations of Ellul, those which show that his argument relies on multiple and shifting definitions of key terms (including the argument to be developed here) may have somewhat less weight than expected. Ellul's concern is more to re-focus the reader, to bring familiar (and unfamiliar) facts into awareness, perhaps to "wake up" the reader to the facts before him, than to define concepts or prove conclusions. In my view he achieves this goal. He "encircles" important realities of our lives, and in reading him we are forced to accomodate these, and thus change our attitudes, assessments, and modes of action.

I. THE EXPANSION OF TECHNIQUE AND THE ABSORBTION OF MAN

To grasp Ellul's over-all framework, it is useful to procede backwards from his conclusions about technological expansion and its end-point.

The end-point. Ellul asserts that humanity is becoming "encircled" in a world of monolithic technique. Technique is closing around humanity like a tightening corset; it is a complex politico-technical system which increasingly controls and will ultimately "absorb" humanity.

This technological system threatens to "mechanize" humans,

to transform them into nothing but movable parts in a great, mindless mega-machine which functions without meaning or value or final ends. The completion of this process signals the essential death of humanity, which will continue to exist only as a component of a "dead" mechanized process. There will no longer be human individuals nor even "specifically organic reactions," as Ellul at one point states it (135). Humanity will have "capitulated" to technique (137). Ellul does not use such terms merely for their undeniable dramatic effect. He takes them quite literally, as we shall see.

A few chilling images may help to explain Ellul's meaning. Karen Quinlan -- and countless others -- have existed as dead life in the service of "life-support" machinery. Extend this idea to an assembly line of workers, speeded up until the workers can no longer endure the pace! Drug interventions may permit additional speed. Direct implantations of electrodes into the brain may permit even greater increases, until at a critical point there are no longer human beings on the line, but only machinery, "wet-ware" robots whose eyes, arms and brains have been adapted to the requirements of industrial machinery. Add to this an image of middle managers, increasingly pinned to their micro-computers, with an increasingly standardized set of administrative routines, trained to discriminate worker behaviors and vital signs, and to respond in a rapid-fire, yet routine fashion! At a certain point what is essentially human fades out -- all that remains is sensory equipment and strictly "artificial" intelligence, even if words like "decision" continue

to be used.

Now imagine all of human life totally integrated into a vast system of technical processes which actually serve no human purpose, the entire population reduced to dead humanity in the service of autonomous technology! At this end-point of technical expansion, human organsisms will continue to subsist, but will be able to act " only in virtue of their commonest and lowest nature." They will " be confined to the role of a recording device" that will merely "note the effects of techniques upon each other and register the results." Technique will "exist with its own substance, its own mode of being..." Dead mechanisms, and not individual human brains, will "synthesize man's acts" (93).

We cannot at this end point continue to speak of individuals as being "adapted" to the machine, for there are no longer any independent individuals to become "adapted." The individual has "capitulated," and exists only as part of a of a larger, mechanized reality. Consider Ellul's forceful example: "The pilot of the supersonic aircraft at its maximum velocity becomes, in a sense, one with his machine. But immobilized in a network of tubes and ducts, he is deaf, blind, and impotent." (326) And it is not merely at work, but in all aspects of life, "livelihood, habitat, and habits," that mechanization encircles man (326).

The Process of Technical Expansion. An account of Ellul's conclusions about the stages and key "moments" in the process of technological expansion will familiarize the reader with some of his central concepts, and prepare the ground for an understanding of his rich conception of "technique."

(1) Primitive Technical Operations From the earliest moments of human history, particular techniques or "technical operations" were developed, as man sought to lighten the burden, gain greater degrees of prediction and control, and increase the yield of productive and other processes. A "technical operation" is any operation carried out in accordance with a given method, to attain a particular end. Thus primitive operations for washing clothing, grinding grain, and burying the dead become standardized in each culture. Method implies standardization of means, and is the key term in the definition. As Ellul states, "in every case it is the method which characterizes the operation" (19).

(2) The Technical Phenomenon. Primitive technical operations are embedded in a webwork of traditional practices, which build up as a result of many decisions and actions, but are not the product of design, -- that is, they are not a product of the conscious, rational adjustment of means to ends. After conscious, explicit means-end thinking is introduced into the choice of means in some domains of a society, we can then speak of the inter-related ensemble of techniques which results as the "technical phenomenon" at that stage of social development. Thus, we may speak about the technical phenomenon in eighteenth century England, in nineteenth century Germany, in the United States after the first world war, in modern Japan, etc. An account of the technical phenomenon in industrial England would refer to techniques for the extraction of coal, and relate these to emerging techniques in the textile industry, etc.

(3) Technical Rationality and Absolute Efficiency. Once explicit and quantitative patterns of rational thinking about the adjustment of means and ends are introduced, experiments can be made, and refinements in the measurement of process variables and results become necessary.

This technical form of rationality carries with it the criterion of "absolute efficiency," the demand that the "one best means" for any given end, considered as a technical objective, be determined . The search for the "one best means" erodes the webwork of traditional ways and means, which was not a product of rational thinking or design, yet which contained within it many subtle and unanalysed inter-actions and effects. A specific desired end is isolated from its traditional connections and treated as a measureable technical objective, and rational thinking "considers results and takes acount of a fixed end ... efficiency." (21) The "one best means" is selected and shaped by technical reason, based on the "calculus of efficiency." (74). The choice of means is no longer a subjective choice among those which are traditionally available and potentially applicable, but really a "question of finding the best means in the absolute sense, on the basis of numerical calculation." (21) We search for the one best means to grow corn, teach long division, etc.

(4) Self-Augmentation. By a self-augmenting process, where each technical development leads to many others (as when the development of the internal combustion engine affected not merely the automobile, but agricultural technologies and aviation) the ensemble of technical operations expands within already technicized fields, and is also extended to new spheres of

activity, so that more and more of life falls within the "technical circle." The growth of technique is "geometric and irreversible."

(5) The Human Barrier. At what may be referred to as the "human barrier" (my term, not Ellul's), further expansion of technique is stymied by resistances in unaugmented human nature. Individuals run away, or revolt, or break down; they cannot take further increases in regimentation or alienation. At the human barrier, special "lubricating" techniques need to be applied to humans to modify their reactions and "fit" them for further expansions of technique. It is at this point that the human sciences and their applied techniques develop and grow towards maturity. The "human techniques" of educational , industrial and clinical psychology and the other human sciences are the "oil in the machine."

(6) The Absorbtion of Humanity Finally a "technological system" driven by the needs of technical expansion "encircles" and mechanizes humanity. Man "capitulates" and is "absorbed." The human substance is destroyed, and an essentially dead humanity subsists as a component in the mega-machine.

The Definition of Technique

We are now in a position to comprehend Ellul's concept of "technique." He starts by differentiating technique from machinery, applied science, and organization.

The Machine. We usually think of technology as the same as, or closely related to, machinery. For Ellul, "technique has left the machine behind," extending well beyond the reach of

mechanical contrivances. But the association with the machine is "deeply symptomatic," because the machine "represents the ideal toward which technique strives," that is, the ideal of mindless, mechanical repitition. As technique enters into every area of life, "it ceases to be external to man and becomes his very substance. It is no longer face to face with man, but is integrated with man, and progressively absorbs him." (6)

Applied Science. A common view of the science-technology distinction -- especially among scientists -- is that technology is applied science: science is a product of the free creative discovery of individual scientists, and technology is a by-product of science. Science discovers laws of the form F > G. If we happen to want G, then we "apply" this law by bringing about F to bring about G. Extended to the human sciences, this view, clearly formulated in Book Six of John Stuart Mill's LOGIC, has underpinned programs of applied behavioral science throughout the twentieth century. Ellul states that this view is "radically false." Technique, applied to nature or man, has never been dependent upon science, and science in our technological society is merely an extension of technology, not a free creative activity.

Organization. Although organization is not the same as technique, some definitions of "organization" contain features in common with Ellul's definition of "technique." He quotes with approval Sheldon's definition, stressing assignment of tasks to individuals to attain," in an efficient and economic sense, and

by coordination and combination of all their activities, the objectives agreed upon." The relationship to technique lies in the systematic routinization implicit in this definition, in which nothing is left to inspiration, ingenuity or even intelligence. In the end, everything is assimilated to the machine. "The ideal for which technique strives is the mechanization of everything it encounters" (12).

Here is Ellul's definition, of "technique," first verbatim, then unpacked:

> Technique is the totality of methods rationaly arrived at, and possessing absolute efficiency (for a given stage of development) in every field of human activity.

The five elements here are: (a) totality, (b) method, (c) rationality, (d) absolute efficiency, and (e) universality. Technique is defined as (a) a totality -- a systematic, comprehensive ensemble of (b) methods -- technical operations involving standarized means (c) rationally arrived at -- through the explicit use of quantitative, experimental research (d) to determine absolute efficiency -- the one best, most efficient means, relative to the given level of technical knowledge, for achieving ends isolated from traditional connections and regarded as technical objectives, in (e) every domain of life, whether directed at inorganic nature, plants and animals, or human beings.

Characteristics of Technique

Building systematically upon this definition of "technique," which he uses as a theoretical construct and not as an

analysis of the everyday meaning of either "technique" or "technology," Ellul explores some characteristics of technique; though presented as a mere list, this discussion contains within it the germ of Ellul's argument for the conclusions about technical expansion noted earlier -- an argument from technical rationality to the automony of technique.

Pre-modern Technique.

To provide a point of contrast for modern, technological society, and a launching point for his account of technical expansion, Ellul first describes the pre-modern technical phenomenon, noting four limitations.

(a) Pre-modern technique applied only in a few life domains; it had little importance in the over-all pattern of life.

(b) Technical means were limited in power. Deficient tools had to be compensated for by the over-all skill of the workers. It was the "expert eye," the "experienced hand" that counted; human talents and intuitions could make weak tools produce strong results. But these varied from man to man according to his gifts. In this situation the worker's powers of sensory discrimination and pattern recognition were integrated into a total activity under individual control; sensory equipment was not merely a "recording device." Actions were "synthesized" by unique individuals and expressed their individuality.

(c) There were local cultural limitations to technique. Techniques were embedded in a total cultural webwork, and were not interchangeable from one culture to the next. These traditional constraints in the technical context meant that technical

innovations were slow to develop and difficult to export.

(d) Technique was limited by human choice. An individual who did not wish to fit into local techniques of production could drop out of the technical circle; at the very worst he could move off to the periphery of society, choosing e.g. a contemplative or ascetic life. Man and technique were, so to speak, on equal terms; individuals could repudiate techniques and veto innovations.

Modern Technique.

By contrast, technique in modern society is almost limitless; the characteristics of modern technique (primarily rationality, but derivatively self-augmentation and other characiteristics) generate the geometric expansion of the technical phenomenon, which ultimately absorbs humanity.

Rationality. This characteristic of modern technique is absolutely central to Ellul's argument; the other characteristics all derive from it. To review: the technical form of rationality arises when a desired result E is isolated from its traditional relationships and established as a measureable technical objective. This permits the shaping and selecting of means for producing E with absolute efficiency, that is, determining the one best means for producing E, the means which maximizes the yield of E per unit cost. "The only thing which matters technically is the yield, production. This is the law of technique" (324). Technical rationality employs quantitative methods to determine the best, that is, the most efficient,

means. For example, a traditional method of planting is compared with a modern method, employing hybrid seeds and a tractor. The modern method is deemed more "efficient" because it produces a larger crop yield per unit cost, once a certain scale of production is attained. (It may be noticed that only the more obvious effects, those singled out for measurement, enter the "calculus of efficiency." Subtle negative effects, including those stemming from the erosion of the traditional web of practices, and perhaps the erosion of the soil as well, escape notice and are not figured into the calculation of costs.)

Automatism of Technical Choice. This search for the one best means on the basis of purely technical as opposed to traditional or personal criteria must be considered both within and on the outskirts of the existing technical circle, the sphere of life already dominated by technique.

(a) Within the technical circle, the choice of means becomes automatic or self-directing when "everything has been measured and calculated mathematically," so that the means chosen are technically correct. A yield of four units is larger than a yield of three units. Thus man is no longer an agent of choice, but merely a "device" for recording the effects of alternative means. In the process he may find himself abandoning tools he regards as excellent, and making a "choice" which a "calculating machine could also make" (79).

(b) Outside the technical circle, any activity may be selected as a new candidate for technical analysis. Desired results are converted into technical objectives, and means more efficient than the traditional ones are found. There is a

pressure to yield to the new technically derived means, because "four is greater than three." As Ellul puts it, " If a desired result is stipulated, there is no choice possible between a technical and a non-technical means" (84). Hence the boundaries of technique expand; technique encroaches upon previously non-technical domains.

Self-Augmentation. The process of technical development is self-augmenting, in the sense that any advance engenders, and even necessitates, others. Self augmentation has three aspects:

(a) As the technical phenomenon expands, more and more men become "technicians," in the sense that they learn to think technically, to apply technical rationality in approaching problems. These individuals uncritically work away at technical improvements in all areas of life, isolating ends as measureable technical objectives, testing innovative means, and hence destroying traditional means, bonds, and limits.

(b) Each advance in any area opens up advances in closely related areas by means of lateral applications. For example, the internal combustion engine gives rise to improvements not merely in automobiles, but in aviation, agricultural instruments, the submarine, etc. The miniaturization of instruments required by the space race extends to every area of life. And each of these developments leads to further technical improvements which stimulate additional lateral applications. The specific problems and solutions are secondary; the new technical methods, which can be extended throughout the technical circle, are primary.

(c) The unanticipated side effects of new techniques

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themselves stimulate "negative developments of a specialized nature" which themselves require technical solutions. The means chosen produce the desired result E, but also unanticipated consequences C, C′, C′′, etc. These negative effects may arouse anti-technical attitudes (e.g. Three Mile Island), but nonetheless their elimination or control also requires new technical means, and in this way as well "technique engenders itself." (92)

Monism. Ellul discusses two ideas under this heading, (a) the unity of the technical phenomenon and (b) the identity of modern techniques. This distinction will play an important role in my assessment of Ellul's argument, so it is important to mark it clearly at this point.

(a) The technical phenomenon, "embracing all the separate techniques, forms a whole" (94). There is a kind of organic unity in the technical phenomenon, (though perhaps the word "organic" is out of place) in that adjustments at any one point necessitate adjustments throughout the system.

(b) There is also an essential identity of the various means within the technical circle. The "common features," he says "are so sharply drawn that it is easy to discern what is the technical phenomenon from that which is not." (95) The common features of modern technical operations are tied to to technical rationality: isolation of results as technical objectives, the use of quantitative and experimental methods, and the attempt to determine the one best, absolutely efficient, means.

It is important to stress that the two components of monism, (a) unity of technique and (b) identity of techniques, are not equivalent -- they are logically independent. Most of the claims

Ellul makes in his discussion of technical monism appear to support the organic unity thesis but not the identity thesis. For example, he states, " All techniques are inseperably united," "everything hangs together in the technical world," and " it is impossible to amputate a part of the system or modify it in any way without modifying the whole." These are all associated with the unity thesis. They imply nothing about the essential identity of these techniques, for quite different techniques can all "hang together" -- just as different colors "hang together" in a well-unified abstract painting.

Universalism. Ellul analyses two aspects of technical universalism, (a) geographic, and (b) qualitative, building upon the preceding analyses of characteristics of modern techniques.

(a) The modern technical phenomenon is gaining ground country by country; its area of action is the entire world. Older cultures collapse on contact with it. They have pressing needs, the technical means for meeting these are clearly superior when judged by technical criteria (automatism of choice) and their transfer destroys traditional relationships and limits. A society at any level of technical development is an organic unity, and the entire culture must be broken up and re-integrated around modern techniques (monism). Further, other civilizations are poorly equipped to respond to culture-shattering side effects of technological transfer. Their traditional means are inadequate or irrelevant. This creates new demands for still further encroachments of modern technique, (self-augmentation) so that "in all areas, technique is producing the rapid collapse of all

other civilizations" (124).

(b) As the technical circle expands, everything, including man, becomes a technical object. If we desire certain results regarding other people or their behavior, we isolate these results as technical objectives and we search for efficient means -- techniques of guidance, persuasion, propaganda, etc. Even traditional western ethical concepts of individuality, freedom, etc., collapse, and we progress toward a universal technological civilization. This terminology, Ellul states, is "exact," (127) for we have a civilization by and for technique, and which "ultimately is technique." The very substance of man, and all traditional civilization, is absorbed, and only technique itself remains (128). Every activity, including what is called "moral," "intellectual," or "artistic," is only a part of technique. This fact is so "enormous," and we are still so blinded by traditional concepts, that we are simply "unable to grasp its meaning" -- the "capitulation" of man to technique.

The Autonomy of Technique. Finally, modern technique breaks entirely free from the control of humanity and becomes completely autonomous. Instead of serving as a means for human ends, technique shapes ends to its own requirements, and becomes the "prime mover" in the realm of ends. Moral and spiritual life are "absorbed" by technique. For example, utilitarian ethical theory is the reduction of ethical judgment to technique. Goods are no longer reflections of human values, adjusted to organic reactions of taste, smell, and touch. The bread we eat -- and ultimately the bread which, under the influence of market research and scientific advertising, we "choose" -- is the bread which is most

readily produced by a technical process. The tomatoes and cherries which we come, under the influence of media pressure, to "prefer" are those which can be mechanically harvested.

II. HUMAN TECHNIQUES

There is a human barrier in this process of technical expansion; unaugmented humans can only tolerate so much mechanization, and new human techniques are needed to adjust them to the emerging requirements of the technical order. Ellul addresses himself to the "human sciences" which take on this task, and in particular to the so-called "humanism" in certain branches of these sciences. These humanists seek to "liberate man" from technique "through the agency of human techniques," to render technique "flexible," and to "reconstitute the unity of the human being" which has been "shattered by the sudden and jarring action" of technique (336-7).

As noted in the Introduction, he levels two charges against this "humanism:" (a) it is an essential component of the unified modern technical system; its function is to adjust humanity to the demands of mechanization and the technological society. It is nothing more than a lubricant of technical expansion, oil in the machine; (b) it is a merely verbal and ideological humanism; under a veneer of reassuring words it is itself essentially technicist in method.

(a) The New Man and the Unity of Technique

To integrate man and machine into a new technical unity, the old man must be broken apart and a new man must be built --

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humanity itself must become the object and product of technique. As technical expansion approaches the human barrier, the human technicians sense that "something is out of line." What is this?

> According to the usual superficial analysis it is man that is amiss. The technician thereupon tackles the problem as he would any other. He has a method which has hitherto enabled him to solve all difficulties, and he uses it here too. But he considers man only as an object of technique, and only to the degree that man interferes with the proper function of technique (338-9).

In the technicised society man is presented with a new challenge. Wheras previously what was demanded of a man was his "presence," the integration and alert readiness of all of his powers and capabilities, what is demanded in the technlogical society is his "absence," that is, the dropping away of any response of the total man, any full and integrated use of his experienced hand or expert, discriminating eye, his ingenuity, spontaneity, and distinct individuality (320). In this condition a man is subject to breakdown. "In order that he not break down or lag behind (precisely what technical progress forbids) he must be furnished with psychic forces he does not have in himself, which therefore must come from elsewhere." The environment is loaded with such stimulants, from tabloids and raucous music to direct psychologi-cal interventions. Ellul states (324) that it is possible

> through psychological means to draw from man his last measure of effort and at the same time compel him to bear up under the disadvantages with which the new society hin-

ders him. This is the first goal of psychological techniques.

It may be protested that there is an inherent limit in human nature, some inherent equilibrium which is and must be maintained. Ellul asks what such a limit could mean when "psychological devices make it possible to push back all limits." There is no inherent nature, no fixed structure of human being. Human nature is plastic; it is possible "by purely artifical means" to "recreate" the human equilibrium within the technical matrix. "The technical society is capable of re-creating man as a very different whole..." (324)

The "humanists," says Ellul, veil the function of the human techniques, which is to adjust man to technique. They have an "astonishing conception of man, a conception that involves contempt for man's inner life to the advantage of his sociological life, contempt for his moral and intellectual life to the advantage of his material life." (338) The human sciences oil the process of adjusting man to the machine; they are essential elements in a unified modern technical phenomenon. The humanists wait until the technical problems of adjusting man to the demands of technique have been met, and then dub that situation "humanist." Unfortunately, "this shouting of humanism always comes <u>after</u> the technicians have intervened; for a true humanism, it ought to have occured <u>before</u>." (339)

<u>(b) Humanism as Technicism.</u>

In the technological society, Ellul claims, the arts of relating to and caring for individual people are all entirely

reduced to technique. Though the term "the human sciences" has been used in a self-congratulatory way, Ellul finds it misleading. Because the "transition to practical application" must be steady, uniform, and rapid, speculative and theoretical explorations are out of place, so "it is scarcely possible to speak of science." (341) Ellul first analyses three dominant features in the landscape of the so-called "human sciences" which "demonstrate" the transition from art to technicism. These are all related to the domination of technical rationality in these "sciences." He then argues that the attitudes and methods of not only the self-proclaimed technicists, but even the so-called "humanists" in the human sciences have these features, and hence are themselves technicist. The features are:

(1) The prevalence of utilitarian approaches to the human sciences. Speculative and theoretical approaches are treated with suspicion. Human scientists "arbitrarily select only those scientific data which seem useful." Certain "indispensible simplifications" are introduced. Man is no longer a mystery, an object of theoretical contemplation and awe. Instead, data and formulations are subordinated to techniques which can immediately be utilized and evaluated. (341)

(2) The extensive application of quantitative methods. Progress in the human sciences comes to require "the exactitude of mathematics." Non-quantitative formulations and data come to be regarded as "illusory," for "only metric methods can analyse and predict efficiently (342)." Hence "biometry, psychometry, sociometry and cybernetics" become the "chief intermediaries" for creating the human techniques.

(3) The prevalence of the technical-experimental cast of mind. It is difficult to test human techniques experimentaly. For the technical circle to expand to include man, it is necessary to select various special contexts for study and research where there could be total control of all extraneous variables. To gain such control requires the nullification of basic liberties, so the army, the prison, the classroom, asylums for lunatics and for the retarded --- and the concentration camps --- have emerged as the favored contexts for the study of man. Techniques refined and utilized in these contexts are then extended to everyday life.

Ellul's strategy at this point in his argument is to survey the various applications of the human sciences (education, industrial engineering, vocational guidance, etc.) to demonstrate that all of them, including the approaches of the so-called "humanists," promote the expansion of technique and themselves possess the identified features of technique.

It is worth emphasizing that this move -- bringing the "humanist" perspectives and methods into the technical circle, is a crucial step in his over-all argument. It is not enough for Ellul to convince us that so-called "humanism" greases the wheels of expanding technique. For the sake of argument we may grant him this much, but to establish his conclusions regarding the "absorbtion of humanity," he must go beyond this, and show that modern humanism is "technique" in his sense. For to the extent that the technological system utilizes and even requires methods of treatment which cannot be brought under his conception of

"technique," the process of technical expansion, the "absorbtion" of humanity by technique, is not and cannot be complete. Hence, either modern humanism is technicism, or Ellul must modify his radical conclusions.

Education

Ellul begins his survey of the human sciences with a discussion of educational institutions and research. The basic structure of argument in this section is reiterated again and again as he turns from education to human techniques in the workplace, counseling, propaganda, amusement, etc. In the exposition and criticism presented here, I concentrate on education and work-related techniques.

For our purposes it is hardly necessary to demonstrate that the dominant paradigms of educational research -- those of Thorndike and Skinner in learning, Bobbitt, Tyler and Bloom in curriculum, etc. match up very closely with with Ellul's conception of technique. All involve the isolation of ends as technical objectives, and the use of experimental methods for evaluating means. But these paradigms have always developed against the counterpoint of "humanist" alternatives, including the perspectives of Dewey and his school, the progressive educators, Carl Rogers and associated trends in humanistic counseling, etc.

Ellul's discussion of humanistic education focuses on the methods of progressive education, including "relaxation," "balanced environment," "play methods of learning" and "individualized instruction," methods which still characterize

humanistic education in the 1980's. He notes that progressive education is promoted as a model for public, state-supported compulsory education. Thus, though the progressivists often speak of freedom, "this freedom consists in a profound and detailed surveillance of the child's activities, ... a precise regulation of his time with a stop watch (347)." The progressivist has a social end, the healthy adaptation of the child to society "as it is" (348). And in a predominantly technological society, such an education "no longer has a humanist end of any value in itself; it has only one goal, to create technicians," (348) and as a consequence is oriented "toward the creation of individuals..who conform to the structure and the needs of the technical group" (349).

Work

Once again, there are familiar workplace techniques which clearly fit Ellul's treatment of technique: the scientific management practices of Frederick Taylor, the time and motion studies, the human engineering approaches in "human factors" and "man-machine systems" research. To fill in his account, Ellul must show that the "humanist" tendencies in industrial and organizational psychology also fall withn the technical circle.

He notes that the "humanists" in the industrial workplace all claim to provide the worker with some relief from the press of encroaching technicism. Ellul considers, among other techniques of industrial psychology, on-the-job counseling and human relations training.

(a) Industrial counseling. Psychologists have been hired to provide distressed workers with counseling sessions as "safety valves" for the expression of dissatisfactions. The counselors never "counsel anything...their sole duty is to encourage the voicing of complaints and to listen to them." It is easier for organizations to provide workers with safety valves in the form of "psychological technicians," than to make concrete modifcations of the form of work or to permit workers to "air their grievances in public."

(b) Human relations techniques. The human relations expert provides techniques to integrate the worker with the group, and to "normalize" his relations with the employers, in order to head off the conflicts which are provoked by life in the technicized environment. "As a remedy," Ellul states, such human relations training efforts "do not amount to much." However they are symptomatic of the incursion of technique:

> We may say that these personal relations are also techniques, that they are not a counterweight to other techniques, but that they bring about the application of technique in the most personal and immediate area of human activities: man's relations with other men.

He adds that "since the countermeasures are themselves of a technical nature, they allow the sphere of the mechanical to develop even further in a vicous circle." (357) These techniques are " a kind of lubricating oil" subordinating spontaneity to the "mathematical calculations of the technicians." They are "wholly oriented toward compelling man to submit to forced labor. Machine and productivity are in the driver's seat" (356).

III. ELLUL AND RECENT AMERICAN DISCUSSIONS OF THE SOCIAL CONTEXT OF EDUCATION

By noting that behavioral science has been an instrument of powerful groups seeking to extend their control by using research-based techniques, Ellul has joined forces with American social theorists who have treated this theme. He has also extended their argument in an interesting direction.

In the formative years of the modern American educational system, such key figures as David Snedden and Franklin Bobbitt sought to promote "social efficiency" in education, and Edward Thorndike sought to develop a systematic theory of learning, by the deployment of methods of testing and treatment deemed "scientific." From the start John Dewey and his followers mounted a "humanist" attack against both social efficiency and a reductive "science" of education. Since that day the battle between technicist and humanist camps has been a constant feature of the education landscape. In our own day such figures as Eliot Eisner and James Popham continue the debate. On such issues as accountability, minimum competency testing, behavioral objectives, and most recently the meaning of "excellence" in education, the technicist - humanist battle continues.

Two meta-perspectives have developed on this debate. A "liberal" group, well represented by Raymond Callahan (1962) and Walter H. Drost (1967, 1976) has viewed the social efficiency and other technicist movements as a regrettable effect of the ideology of the early American scientific-industrial era and the overwhelming social power of the industrial leaders who sought to

shape social institutions. These liberal theorists contend that American social institutions would have been better and more just had educational leaders in the formative years of the national system of schools and colleges chosen to be guided by John Dewey and his humanist followers instead of the industrial leader's view of technical efficiency. Loren Baritz (1960) seems to concur. He blames the social scientists as a group for developing techniques of control to fit the industrialists' needs to control the behaviors and emotions of the industrial working class. Baritz accuses these social and behavioral scientists of trading their freedom of inquiry for money and access to power; the "humanist" social scientists who did not in this way "sell out" are commended.

A revisionist group, best represented by Clarence Karier (1974, 1975) has held that Dewey and his humanist colleagues were also, in their own way, responding to the pressures of the scientific-technical ideology of the industrial society, and accomodating to and cooperating with the capitalist industrial leaders. On this view, the so-called "humanist" theories and methods in education and industrial management have played an important and complementary role in the establishment of coercive behavioral controls in the technocratic state.

Ellul's analysis, based primarily on his interpretation of French educational and industrial institutions and theories, agrees strongly with the revisionists on this point. Dewey and his school are frequent targets of Ellul's barbs. As we have seen, Ellul claims that the "humanistic" treatments in education,

counseling, and industrial management are nothng more than oil in the machine, a lubricant for the increasing mechanization of human life. Such humanistic techniques as progressive education and nondirective counseling provide the warm human touch to control people whenever cold technical efficiency arouses resistances. As Tennessee Ernie Ford put it, "if the right hand doesn't git you then the left hand will!"

Ellul, however, goes a step beyond the American revisionist analysis. Rejecting the technicist - humanist duality, he sees the legitimation of technical rationality as pushing the humanists themselves toward the ideal of technical efficiency. In our American context, for example, the famous eight year study of progressive education, and Carl Roger's empirical research program, may be interpreted on Ellul's theory as attempts to prove that the so-called humanist techniques are superior, not when judged by humane philosophical and ethical criteria, but on the grounds that they are technically more efficient means for the control of human behaviors and emotions.

IV.CRITIQUE AND CONCLUSIONS

The Revisionists agree with Ellul that the humanist approaches in the human sciences complement technicism. The methods of the humanists and technicists "hang together," as inter-related pieces of the complex modern technical phenomenon. Ellul goes beyond the revisionists in asserting what we have earlier called the "identity thesis" -- that there is an essential identity of method, that humanist methods are reducible to technique in his special sense. Earlier I showed how this

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thesis is central to Ellul's argument. If humanist approaches are necessary as a lubricating oil in the technological society, and yet cannot be reduced to technique, then there remains an irreducibly non-technicist sphere, and humanity cannot be completely "absorbed" by technique. We are now prepared to assess Ellul's arguments in support of the identity thesis.

Recall his characterization of progressive education. He says that the progressive educator seeks to adapt the child to society as it is, and hence to create individuals who conform to the structure and needs of the technical world, to create little technicians. This argument seems geared to demonstrate that the practices of humanistic education are required to further the expansion of "technique" and the unification of the technological system. Even if Ellul is correct in claiming that progressive education promotes the expansion of technique, it hardly follows that progressive methods are themselves comprehended by "technique" in Ellul's sense. Yet that (the identity thesis) is the claim which requires support. He does state that progressivist methods constitute:

> a highly refined technique, detailed and rigourous; and makes the most exacting demands on the technician himself, who must indeed be a remarkable technician to be able to apply it. It is not a mechanical technique that applies itself <u>eo ipso.</u>

And he adds:

> The same holds true for the majority of human techniques we shall discuss. The person of the technician counts for a very great deal. (345)

This is where the strains in Ellul's argument begin to appear. The defining features of "technique" have been dropped from sight. (i) He says that progressivist techniques do not "mechanically apply themselves." But "technique" in his sense tends toward mechanization as an ideal, applying itself and in the process reducing humans to mere "recording devices" and "calculating machines." (ii) He says that in progressive education the "person of the technician counts for a very great deal." But in "technique" there is an automatism of choice. The "person of the technician" counts for nothing, because "four is greater than three." That is, specific measurements, and not personal choice, automatically determine the proper next response of the technician. As he puts it, "the means of exerting action on men...must be rendered independent of the individual who employs them so as to make them applicable by anyone at all" (341). (iii) Similarly, the three features of the human sciences which "demonstrate" the transition to technique -- the utilitarian attitudes, quantitative methods, and technical-experimental selection of research methods and contexts -- have not been applied. Progressive educators, with their passions for humanistic philosophy and psycho-analytic psychology, their qualitative and clinical approaches to educational study, and their "relaxed" and "open" classroom methods, simply do not in general exemplify such features of "technique."

Turning to Ellul's discussion of humanism in the workplace, we find similar difficulties. Recall Ellul's claim that non-directive emotional counseling and human relations training

"bring about the application of technique in the most personal and immediate area of human activities," and that since they "are themselves of a technical nature, they allow the sphere of the mechanical to develop even further..." Ellul does not further substantiate this claim -- that these humanist modes of psychological treatment are "technique" as he has defined it, -- and this claim is not plausible. The fields of non-directive counseling and human relations training have not been dominated by technical rationality, any more than has progressive education. There is no "calculus of efficiency" which determines the "one best means" to operationally defined, precisely measureable, treatment objectives in these fields.

Finally, this problem is compounded in Ellul's discussion of other human techniques. For example, while propaganda techniques are "calculated and deliberate," amusement techniques are "spontaneous and indeliberate" (376). But to fit Ellul's definition of "technique," a technical operation must be "rationally arrived at," in precisely the sense of being "calculated and deliberate." Spontaneous and indeliberate technique is simply not "technique" in the required sense.

* * *

We may now draw two conclusions. First, Ellul has failed to demonstrate the identity of techniques in the technological society. He has failed to make his case that humanist approaches are inherently technicist. Second, <u>if</u> such non-technicist or "humanistic" methods as progressive education, non-directive counseling and human relations training prove necessary on an on-

going basis to provide the "lubricating oil" for the operation of the technical system, then the process of technical expansion can never be completed -- humanity can never be completely "absorbed" by technique.

These conclusions compel us to re-consider "dualistic" accounts of human techniques in the technological society, as alternatives to Ellul's "monistic" account. To take one example, John Naisbitt states in his popular book MEGATRENDS that as the standardization and regimentation of high technology encroaches upon individuals, they seek "high touch" experiences for balance and alleviation of "high tech" pressures. Spontaneous conversations, the counselor who "really listens," group experiences --- these all provide some relief from "high tech" pressures of the industrial workplaces and computer sweat shops. Rigid schedules of behavior modifications or carefully monitored psycho-pharmocological treatments cannot provide this kind of relief, precisely because they <u>are</u> mechanical, repetitious, and reductive -- just more "high tech" pressures.

However, such oases of human contact in the increasingly regimented world should not necessarily be regarded as a "ray of hope" for humanity. On the one hand it is at least possible that such oases of "humanism" in the human sciences are merely transitional, and will disappear when no longer needed to "lubricate" the further expansion of technique. Though Ellul has not demonstrated this (or attempted to), nothing in my critique counts against this possibility. On the other hand, even if irreducibly "humanist" treatments persist, Ellul may be correct

in claiming that they represent in our era little more than an empty humanism, mere hand-holding in the technological concentration camp.

This leaves us with a final question. Will the humanist branches of the human sciences survive in any form? Or will they eventually be absorbed by an unqualified technicism? The tension between humanism and technicism is now very great. New pressures towards standardization in psycho-therapy are being felt -- the new diagnostic and statistical manual of the American Psychiatric Association (the DSM III) with its a-theoretical, research-bound orientation to the mental disorders, has attained unprecedented popularity and authority. A bio-technical revolution has been announced in psychiatry (See Nancy Andreasen, THE BROKEN BRAIN, 1984, for an up-to-date exposition), with a program of psycho-pharmacological and electo-convulsive treatments. A spate of national educational reports has appeared (including A NATION AT RISK) demanding the use of scientifically certified and standardized treatments and tests. An unvarnished technicism is thus alive and rapidly advancing on many fronts. Meanwhile, anti-technicist counter-forces are emerging; manuals providing service professionals with simple routines for countering compulsory technicist methods are appearing for the first time (see e.g. Ted Nunan, COUNTERING EDUCATIONAL DESIGN, 1983).

Whether humanist methods will in the long run be absorbed by technicism remains an open question. Ellul's vision of humanity absorbed by technique may one day be a reality. But if my line of criticism has been on target, this will not come to pass because contemporary humanist methods are inherently technicist.

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